ISCO MODEL 2150 SOFTWARE HISTORY

REVISION 1.28
Software Release Date: 08/17/09

Corrections:

1- Added velocity diagnostic tests for production use.

2- Added support for 115200 bits per second communication. This will work with Hyperterminal and Flowlink. The firmware update speed is still locked to 38400 bits per second to maintain compatibility with the update software utility. This should work on newer 2150's. Very old 2150's and possibly all 2151's do not have the proper hardware to support it but will still work at the usual 38400 baud and lower.

REVISION 1.27
Software Release Date: 05/27/09

Corrections:

1. Fixed problem with temperature spikes around zero degrees Celsius. The problem was caused by short cycling of the AV sensor power The power control functionality was re-written to ensure that power is not short cycled and under normal circumstances is only turned on for a complete level-velocity-temperature set of readings.

2. Fixed problem in the system resource handling code that could cause level readings to stop updating after the level was adjusted. This is most notable with the 2110 and all modules in a site containing a 2110 should have code with this fix.

3. Fixed the power override functions in diagnostics that got broken with the original rewrite of the power control code.

4. Updated priorities for the Neuron and data collect tasks. The Neuron task is now the highest priority task which should allow for maximum throughput on network communications.

5. Changed the Neuron interrupt handler to priority 0 - which is the highest. This was done to make it more responsive because during high loads where a real-time-clock interrupt and Serial I/O is going it could be delayed too long and then have to resync and possibly lose a message.

6. Fixed a problem when a parameter is configured for a primary data storage rate of OFF and a secondary rate controlled by an equation. When connected with Flowlink the parameter would store data at 5 second intervals.

7. Fixed problem with pH not updating in a modbus register when the 2150 is operating as a modbus device.

8. Fixed problem with module stops logging. If a customer does not disconnect with Flowlink before removing the communications cable and places the connector cap on the top connector, serial traffic got looped back to the receive side and caused the module to lock up due to the infinite traffic.

    a. Made changes to more effectively detect looped SLTA messages from the top serial port and discard them.

    b. DELL computers commonly leave the serial port in a "BREAK" condition when the port is not actively captured by an application such as HyperTerminal or Flowlink. This causes random

lockups on the module which is connected to the computer. The serial port drivers were updated to disable the port during this condition.

9. Changed the disconnect timing on a niFlush_IGN command which signals the end of the Flowlink conversation. It went from 10 seconds to 2 seconds for alert-ack protocol which is used in the 2102 wireless connection.

10. Fixed garbage characters after the model name in a VCOM ? command in diagnostics.

Enhancement:

1. Added logging of queue errors in the error log.
   Changed so the measurement task now only receives a single measurement message instead of 4 per reading. One for velocity, one for signal, one for spectrum and one for ratio.

2. The measurement task now delivers 4 messages per request instead. The previous configuration caused the measurement task queue to overfill and drop readings.

3. Added a retry mechanism to retry a system resource capture which affects any measurement that requires an exclusive timeslot to prevent cross-talk such as velocity and ultrasonic level measurements. This may address some of the "missing sensor" errors reported with the 2110.

REVISION 1.25
Software Release Date: 04/23/09

Corrections:

1. Short cycling of the AV sensor power caused temperature spikes around zero degrees Celsius.

2. Rewrote the power control functionality so ensure that power is not short cycled and under normal circumstances is only turned on for a complete level-velocity-temperature set of readings.

3. DELL computers commonly leave the serial port in a "BREAK" condition when the port is not actively captured by an application such as HyperTerminal or Flowlink. This causes random lockups on the module which is connected to the computer. The serial port drivers were updated to disable the port during this condition.

4. Fixed problem with module stops logging if a customer does not disconnect with Flowlink before removing the communications cable and places the connector cap on the top connector, serial traffic got looped back to the receive side and caused the module to lock up due to the infinite traffic.

5. Fixed a problem when a parameter is configured for a primary data storage rate of OFF and a secondary rate controlled by an equation. When connected with Flowlink the parameter would store data at 5 second intervals.

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7. Made changes to more effectively detect looped SLTA messages from the top serial port and discard them.

8. Fixed garbage characters after the model name in a VCOM ? command in diagnostics.

Enhancement:

1. Added a retry mechanism to retry a system resource capture which affects any measurement that requires an exclusive timeslot to prevent cross-talk such as velocity and ultrasonic level measurements.

2. Changed the disconnect timing on a niFlush_IGN command which signals the end of the Flowlink conversation. It went from 10 seconds to 2 seconds for alert-ack protocol which is used in the 2102 wireless connection.

3. Updated priorities for the Neuron and data collect tasks. The Neuron task is now the highest priority task which should allow for maximum throughput on network communications.

4. Changed the Neuron interrupt handler to priority 0 - which is the highest. This was done to make it more responsive because during high loads where a real-time-clock interrupt and Serial I/O is going it could be delayed too long and then have to resync and possibly lose a msg.

REVISION 1.23
Software Release Date: 11/20/08

Corrections:

1- Fixed a problem with the DDUMP command where it would respond with "Could not open file" after a previous DDUMP Ymodem transfer was aborted.

Enhancement:

1- Added the optional software features support.

2- Made changes for the file transfer of DDUMP to be more patient for modem communications.

REVISION 1.22
Software Release Date: 05/23/08

Corrections:

1- Made changes in the velocity measurement code to detect when a velocity spike is generated and cause a retry of the measurement.

Enhancement:

1- Added the Velocity Spectrum, Velocity Signal and Velocity Spectrum Ratio parameters to the Flowlink Measurement tab. The parameters can be made visible from the “Jump to measurement” tab. The parameter s can be setup for logging at regular intervals, or on user a defined trigger. These parameters are only available when the user is running Flowlink 5.06 or above.

2- The voltage measurement process has been changed to average readings taken at a 30 minute maximum interval. This provides a more stable measurement and therefore a better indication of the remaining battery capacity.

REVISION 1.21
Software Release Date: 03/13/07

Corrections:

1- Made improvements in the velocity measurement code to filter out velocity readings that fall outside of an expected measurement range based upon the level to velocity relationship or "hydraulic coefficient" at the site. An error code 3 will be recorded for a reading that has been filtered.

Enhancement: None.

1- Added the TIME and DDUMP commands on the diagnostics menu. These commands support a simplified data dump protocol to extract the stored data from a site.

2- It now reports the module name instead of the model number when displaying lithium battery and software incompatibility messages in Flowlink.

3- Added reporting of a bad lithium battery when connecting to Flowlink.

4- The time can now be set when a module has a bad lithium battery. When a module with a bad lithium battery first powers up, it will set the clock time to the time of the last stored reading rather than the time the clock was last set.

5- The voltage measurement now reports the lowest measured voltage during the interval and is taken under load. This should provide a more stable measurement and provide a better indication of the remaining battery capacity.

REVISION 1.18
Software Release Date: 03/16/06

Corrections: Fixed problem when data points are used for Flow conversions

Enhancement:

1- Made changes to improve the velocity measurement and address problems of large negative velocity spikes. Now have the ability to have it ignore the negative frequency spectrum when used with the soon-to-be released Flowlink 5.0 stage 2.

2- Added new triggers functionality that enables and/or combinations of logic equations for secondary rate data storage. Need the new Flowlink 5.0 stage 2 to configure the new functionality.

3- Added the ability to update firmware remotely through the network. This enables firmware updating over a modem connection through a 2103/C modem which also has updated firmware.

REVISION 1.17
Software Release Date: 08/12/04

Corrections: Fixed a problem which could cause velocity to stop logging when velocity diagnostics are retrieved.

Enhancement: None.

REVISION 1.16
Software Release Date: 10/01/04

Corrections:

1- Added code to not process incoming messages from the SLTA or neuron while the router is configuring after an address change.

2- Added code for detection and clearing of a Neuron error. We were seeing error code 0x85 from the neuron which
indicates a bad address. It would then stop sending messages although it would still receive them.

3- Added extra filtering for detection of bad addresses.

4- Added error log entries of NURON_RQ from the neuron task when
a bad address is detected. The neuron now waits longer - about 3 seconds of inactivity
before it goes to sleep.

5- Added the FLOOD diagnostic command but is conditionally compiled out. Added reporting of the task associated with sending an invalid formatted IAM.

6- Hard coded to use the modem timing for all connections -even direct ones since Telog may use the pass-through mode.

7- Removed unused code from Slta_Comm_Buffered which read last_rcv_time.

8- Rewrote the transmit side of Slta_Comm_Buffered to place the NI_ALERT at the beginning of the buffer so we only make one call to fput_data() which will help reduce interrupt overhead.

9- Changed to address looping messages when the customer disconnects the serial cable and plugs the (loop back) cap on the top connector.

10- Added carrier detection to terminate communications when the modem drops the line.

11- Added a synchronization call in the H8MASTER file to resync the Neuron and H8 communications when an unhandled command code is detected.

12- Added the HALTED state to system processes to put them in during address changes. This should help prevent lockups when a sys proc has a file open and the file system gets a reset. It will watchdog timeout if things do not go as expected.

13- Fixed problem with ZAP memory which may cause lockups or abnormal restarts.

REVISION 1.15
Software Release Date: 04/19/04

Corrections: Fixed problem with retrieving diagnostics files that could randomly lock up the unit or set the time to the year 2000.

Enhancement:

1- Improved the velocity code to do additional retries and extra processing which should reduce the number of velocity dropouts.

2- Added code to check for an improperly set neuron address and correct it.

REVISION 1.14
Software Release Date: 02/12/04

Corrections: Fixed problem with connecting over a wireless connection. It could have locked onto the incorrect (buffered) protocol if there was noise generated by the 2102 during a wireless connect.

Enhancement:

1- Added Modbus ASCII communications capability.

2- Added support for 2 minute data logging. This requires Flowlink 4.16 and updated firmware in all modules at a site.

REVISION 1.12
Software Release Date: 05/16/03

Corrections:

1- Fixed problem with master clock negotiation and re-negotiation after a master is pulled off the stack. Previously, the problem could be seen by missing readings from data or data time stamps with odd times such as 12:00:03

2- Fixed problem with bloated totalizers being recorded in the database when sensors come out of a prolonged error state.

Enhancement:

1- Added code to detect and correct a bad LIMITS section in the level config file that can be caused by Flowlink. It causes Flowlink to report that it must have the level between -1 and -1 meters to adjust it.

2- Changed the flow rate calculation to use the last good velocity reading when the velocity is reported as an error and the real time Level reading.

REVISION 1.11
Software Release Date: 01/04/03

Corrections: Fixed a totalizer rollover problem that would occur at high flow rates.

Enhancement: Added support for the 2100 series sampler interface cable. This software is required to use it.

REVISION 1.10
Software Release Date: 10/15/02

Corrections:

1- Fixed a problem with the wireless schedule where it would not power the radio over a Saturday midnight when using the weekly schedule.

2- Fixed a problem with the Neuron (network processor) code which could cause network communications to fail.
3- Made a change to the file system to reduce the chance of a system lockup when the module address is changed.

Enhancements:

1- Added code to the Level and Velocity sensor tasks to report readings faster when the system has pending reading requests. Changed the Level measurement code to not allow out of range calibration values such as when older AV simulators were used.

REVISION 1.09
Software Release Date: 04/23/02

Enhancements:

1- Added support for the buffered protocol to improve communications throughput.

2- Added a power-restore repair of serial data storage flash. If a page of flash was in the process of being written when power failed the flash page is corrupt. The software now saves a copy of the flash page in non-volatile ram before writing the page. On power-up the software compares the ram copy with what is in the flash and will update the flash if the original write failed.

REVISION 1.08
Software Release Date: 07/01/01

Corrections:

1- Added code to support the 2103 alarm dialout capability. It now logs power fail and restore codes in the error log.

REVISION 1.07
Software Release Date: 06/01/01

Corrections:

1- Fixed problem with the file system that only happens when a file has a size equal to a multiple of 258 bytes (the flash page size). If this occurs then the file transfer to Flowlink or a field wizard will fail and Flowlink will not connect to the 2150.

2- When the software is upgraded to 1.07, Flowlink will be able to connect to the unit.

3- Fixed a problem when a flow rate secondary storage interval was set up and based upon a flow rate condition. Prior to the fix the flow would be stored at erratic intervals.

4- Fixed a problem with the zero flow on velocity error setting where no flow was stored on an error. This caused flowlink to duplicate the last valid reading on the charts.

5- Fixed a problem when storing total flow and the “Update total flow every” setting was set greater than 1 hour. It would usually store zero for the total flow.

6- Fixed a problem when storing total flow and the totalizer rolls over. When the totalizer rolls over a large negative number would be stored.

REVISION 1.06
Software Release Date: 08/28/00

Corrections:

1- Fixed a problem with the level reporting "port busy" in the diagnostic menu.
IMPORTANT NOTE! The version 1.06 software does a restructuring of the filesystem from 1.05 or earlier software. This means that if version 1.05 software is put back into a 2150 that previously had version 1.06 loaded, a complete reset of the 2150 must be done using the "R" character after loading version 1.05. This will result in the loss of all stored data and configuration.

REVISION 1.05
Software Release Date: 08/28/00

Corrections:

1- Fixed a problem that caused "port busy" level errors when reading the velocity probe after a velocity simulator was used.

REVISION 1.04
Software Release Date: 05/15/00

Corrections:

1- Added code to support the wireless node.

2- The software now looks for keys in the non-volatile memory to determine if the non-volatile area needs to be re-initialized. This was a problem when upgrading a module from 1.02 to 1.03 and could cause strange levels to be reported.

REVISION 1.03
Software Release Date: 02/07/00

Corrections:

1- Fixed problem where the data storage could report an extremely large amount of available memory. This is a result of the database being configured for sensors to start in the future.

2- Fixed problem with A/V when errors were not passed on to the database at regular intervals when the inputs Level/velocity) were reporting errors.

3- Corrected a problem with time synchronization in multi-node stacks. This could cause multiple readings to be recorded in the database with identical times.

4- Fixed problem with interactions between volume and volume1 related to secondary reporting interval based on volume1.

5- Fixed problem with errors not being reported when a probe is disconnected.

Enhancements:

1- Improved performance when setting up numerous secondary recording intervals based on level.

2- Changed to report a velocity error when reporting data to the database.

REVISION 1.02
Software Release Date: 01/05/99

Corrections:

1- Fixed problem where the data storage could report an extremely large amount of available memory. This is a result of the data base being configured for sensors to start in the future.

2- Fixed problem with A/V when errors were not passed on to

3- the database at regular intervals when the inputs(level/velocity) were reporting errors.

4- Fixed problem with errors not being reported when a probe is disconnected

5- Fixed problem with time synchronization in multi-node stacks. This could cause multiple readings to be recorded in the database with identical times.

6- Fixed problem with interactions between volume and volume1 related to secondary reporting interval based on volume1.

Enhancements:

1- Changed to report a velocity error when reporting data to the database.

2- Improved performance when setting up numerous secondary recording intervals based on level.

REVISION 1.01
Software Release Date: 11/05/99

Enhancements:

1- This is the first production release of code for the 2150.
There is some debugging code that was overlooked and made it into this release. Because of this, the bin file may be loaded into a unit that has a hardware revision of A3 which is currently non-existent. When creating future hardware revisions, version A3 should be skipped to prevent this code from being loaded.

REVISION 1.10
Software Release Date: 10/15/02

Corrections:

1- Added code to the Level and Velocity sensor tasks to report readings faster when the system has pending reading requests. Changed the Level measurement code to not allow out of range calibration values such as when older AV simulators were used.

2- Fixed a problem with the wireless schedule where it would not power the radio over a Saturday midnight when using the weekly schedule.

3- Fixed a problem with the Neuron (network processor) code which could cause network communications to fail.

Enhancements:

1- Change to the file system to reduce the chance of a system lockup when the module address is changed.